Ethnoveterinary Medicine: *A Potential Alternative to Orthodox Animal Health Delivery in Zimbabwe*

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ABSTRACT

This study examined community-based solutions to farmers' animal health problems based on traditional ethnoveterinary knowledge in Zimbabwe (Mashonaland East, West, and Central). A field manual of traditional veterinary treatments of 14 diseases in farm animals was compiled, offering a range of traditional remedies as well as methods of preparation and administration of orthodox veterinary medications. A total of 200 randomly selected communal and smallholder farmers were given questionnaires about the status of animal health delivery in their area. The questionnaire also covered common livestock ailments that had been treated by traditional means and the medicinal materials used, their preparation, application, and expected results. Statistical methods were used to identify which plants were used most frequently in veterinary medicine, based on (1) the frequency of association of a particular plant species with a particular or perceived medicinal value (*botanical consistency*) and (2) the frequency of a particular plant species being associated with or used to treat a particular disease (*consistency of veterinary usage*). Coccidiosis was a common treatable condition in poultry, with remedies showing 88% botanical consistency and 92% veterinary consistency. High levels of botanical consistency and veterinary consistency, respectively, were seen for specific remedies for septic wounds (61%, 89%), helminthes (average, 61%, 61%), retained afterbirth (63%, 71%), eye problems (74%, 83%), delayed parturition (51%, 67%), and fractures (68%, 72%). Some herbs have multiple medicinal uses; others are effective as mixtures. Different herbal treatments were often cited for the same disease, with varying dosages and methods of administration. Standardization and validation of traditional knowledge is necessary to fully integrate ethnoveterinary medicine into orthodox veterinary medicine.

INTRODUCTION

Ethnoveterinary medicine, the scientific term for traditional animal health care, encompasses the knowledge, skills, methods, practices, and beliefs about animal health care found among the members of a community.[1] The knowledge base differs not only from region to region but also among and within communities. It has been developed through trial and error and deliberate experimentation. Therefore, it is less systematic, less formalized, and not universally

recognized as a valid method of disease control in animals. In many countries, there has been little documentation of traditional knowledge; rather, it has been transmitted across generations by an oral tradition and therefore is in danger of extinction.

While traditional healers have less to offer in the treatment and control of epidemic and endemic infectious diseases like foot and mouth disease, rinderpest, septicemia, anthrax, and acute life-threatening bacterial diseases, they can cope with a reasonable spectrum of common diseases such as diarrhea, wounds, colds, worms, coccidiosis, and reproductive disorders.

Livestock owners have an excellent knowledge of ethnobotany, which has formed the basis for screening plant materials as potential sources of medical drugs.[2] The herders of the Turkana and Samburu communities in Kenya identified about 60 diseases of livestock and grouped them as treatable and non-treatable using local remedies. Approximately 35 of these diseases were treatable, including streptothricosis, mange, cough, and diarrhea.[3] Scientific research and experiments by farmers in Trinidad and Tobago found that adding preparations from plants such as *Normadica charantia* to drinking water improves the productivity and profitability of broilers. Paw-paw latex (*Cicaria papaya)* has been used successfully as an anthelmintic drug in goats.[4]

Despite such successes, very little of this traditional knowledge has been documented in developing countries, and ethnoveterinary knowledge has had no place in mainstream veterinary medicine. In recent years, however, increasing attention has been paid to ethnoveterinary knowledge and local veterinary practices.[5] There is a growing acceptance that some of these practices have therapeutic value, and that they should be documented before this knowledge is lost.

The need to preserve a disappearing ethnoveterinary heritage is compounded by problems within the modern veterinary health sector in Zimbabwe. The supply of veterinary health services and medications is constrained by scarcity, erratic supply, and prohibitive cost. Although an extensive network of veterinary hospitals exists, a poor communication infrastructure and a shortage of manpower drives livestock owners to treat animals themselves, consult a local healer, or slaughter the animal if the cost of treatment becomes a significant proportion of the value of the animal. Traditional healers do not charge for their services; they are paid in kind by satisfied customers.

In view of these constraints, the search for alternatives becomes important. Ethnoveterinary medicine offers great potential for development, and provides a low-cost alternative to allopathic medications.

METHODS

Two hundred smallholder and communal farmers in Zimbabwe were surveyed about their perceptions of the status of animal health delivery in their area. Respondents were selected at random from Mashonaland East, West and Central. The respondents were household elders who kept livestock as well as traditional animal healers and herbalists.

Questionnaire and Collection

The questionnaire covered common livestock ailments the farmers had encountered and diagnosed, ailments they had treated by traditional means, and medicinal materials used, their preparation, application, and expected results. Leaves, roots, and bark of the medicinal plants were collected and preserved and later identified at the Zimbabwe National Herbarium and Botanic Gardens.

Data Analysis

Data were analyzed by pair-wise and matrix ranking. Statistical measures of central tendency, dispersion, and percentages were computed using the Statistical Package for Social Sciences (SPSS Inc.) Statistical methods were used to identify plants used most frequently in veterinary medicine, based on (1) the frequency of association of a particular plant species with a particular or perceived medicinal value (*botanical consistency*) and (2) the frequency of a particular plant

species being associated with or used to treat a particular disease (*consistency of veterinary usage*).

RESULTS

While livestock owners are generally capable of identifying and diagnosing disease conditions in their herds, the survey revealed that approximately 95% never avail themselves of the services offered by the veterinarians except for cattle dipping, which is legally mandatory. The majority of cattle owners cited the prohibitive costs of drugs and services provided, while others perceived the veterinary health service as an organization that destroys livestock in the event of disease outbreaks, and thus would not seek assistance from them. The remaining 5% often buy veterinary drugs to treat their animals without any consultation from the service providers.

Indigenous veterinary remedies are typically made from plant preparations, although other materials such as used motor oil, pesticides, and snail shells are used. Common and scientific disease names do not always match. To overcome this difficulty, a disease was defined as being the symptom or a group of related or similar symptoms (Table 1).

Coccidiosis and Newcastle disease were very commonly treated conditions in poultry. Together the two diseases were associated with an average botanical consistency of over 85% and an average consistency of veterinary usage of 60%. Septic wounds were the most common clinical condition in cattle, which could have been a result of injury inflicted during draft power operations, dehorning, or castration. Its remedy had a high degree of consistency of veterinary usage (average for four plant remedies, 70.5%).

Some plants are used to treat more than one disease, while others are used as mixtures. Herbalists in the same geographical area often cite different herbal treatments for the same disease, and variations were often encountered in the method of preparation, dosing, and administration of these remedies.

Other limitations of ethnoveterinary medicine include the lack of availability of some plant species at certain times of the year and the inadequacy of traditional means of disease diagnosis, which only identifies symptoms and not the underlying cause.

CONCLUSION

Training in African veterinary colleges and universities is usually based on Western models of veterinary education. Most African institutions were founded in colonial times or in the1950s or 1960s.[6,7] These universities and colleges were initially financed as aid programs and staffed with Western lecturers. Faculty members continue to receive postgraduate training in Europe. While the success of Western intervention in the control of major epidemic animal diseases like foot and mouth disease, anthrax, and rinderpest cannot be argued, a one-sided orientation toward Western science and emulation of Western veterinary colleges obscures the fact that there are also many worthwhile non-Western traditions of veterinary medicine. Many pastoralist societies have developed large bodies of knowledge with regard to animal health and management.[8] The significance of ethnoveterinary knowledge is gaining increasing recognition even among representatives of mainstream animal science.[9] If sufficient attention is paid to these alternative medical traditions during veterinary training, it may go a long way toward preparing students for practice as well as fostering the sustainable use of natural resources available within their local communities.

Ethnoveterinary medicine can be economical but its cost-effectiveness depends on many factors. Formal research will no doubt help to confirm the claims made by traditional healers with respect to the efficacy of their remedies. This body of knowledge requires validation with a view towards integrating it into orthodox veterinary medicine. There is a need to standardize ethnoveterinary techniques.

An indigenous animal health-care system should be included in the curricula of

Table 1. Traditional remedies for the treatment of commonly encountered disease conditions in farm animals in Zimbabwe

Animal condition	Remedy [Common name, (Genus, species)]	Botanical consistency[a] (%)	Consistency of veterinary usage[b] (%)	Method of application
Septic wounds	Muvengahonye (*Canthium spp.)*	61	89	Fresh leaves are ground and applied to the wound
	Muvheva (*Kigelia africana)*	42	53	The inner core of dried fruit is applied as a powder on the wound
	Murenja (*Cassius quandrangularis)*	34	68	Fruit is crushed and the fluid applied to wound
	Gavakava (*Aloe spp.)*	33	72	Dry leaves are crushed and the powder applied
Eye problems	Nhundurwa (*Solanum indicum)*	74	83	Fruit is crushed and the fluid is applied to the eye
	Snail's shell	51	43	Shell is ground to powder and applied to the eye
Bloat	Munhanzva (*Pauzzozia mixta*)	39	65	Leaves crushed and water added; animal made to swallow mixture
	Chin'ai[c] (Phlegmostomium)	55	51	Mix with table salt, add water; animal made to swallow mixture
Coccidiosis	Gavakava (*Aloe spp.)*	88	92	Grind fresh leaves and add to drinking water
Worms	Muzhozho (*Venonia amygdalina)*	49	73	Add water to ground fresh leaves; animal made to swallow mixture
	Banana (*Musa paradisiacal)*	57	44	Add water to crushed fresh roots; animal made to swallow mixture
	Gavakava (*Aloe spp.)*	78	65	Add water to crushed fresh leaves; animal made to swallow mixture
Newcastle disease	Gusha (*Sesanum angustifolius)*	33	87	Crush fresh fruit and add to drinking water in poultry
Retained afterbirth	Munhanzva (*Pauzzozia mixta*)	63	71	Fresh leaves are crushed and the slippery paste inserted into the vagina.
Fertility	Gomarara (*Loranthus spp.)*	55	36	Feeding fresh leaves to rabbits improves kidding rate
Snake bite	Munyoka (*Amaranthus gneizaus)*	27	74	Add water to crushed fresh roots; animal made to swallow mixture
	Banana (*Musa paradisiacal)*	36	54	Add water to crushed dried roots; animal made to swallow mixture
Delayed parturition	Murenja (*Cassius quandrangularis)*	51	67	Crush fresh stem and leaves, place in the vagina to hasten parturition
Poor milk flow	Baobab (*Adanonsia digitata)*	22	43	Inner core of dried fruit is removed, added to water; animal made to swallow mixture.
Fractures	Batanai (*Bulbophylum spp.)*	68	72	Bark is tied around fracture as supporting pad.
Fleas	Rutapatsikidzi (*Aneilema hockii)*	32	59	Branches of plant are placed near sleeping animals. Fleas are attracted by the herb and leave the animal.
Diarrhea	Murumanyama (*Xeroiderris stuhlmannii)*	29	63	Fresh leaves are crushed, water added; animal made to swallow mixture

[a]Frequency of association of a particular plant species with a particular or perceived medicinal value.
[b]Frequency of a particular plant species being associated with or used to treat a particular disease.
[c]Chin'ai refers to soot-/carbon-tainted grass that accumulates in the thatched roofs of kitchens as a result of burning firewood, cow dung, or coal from cooking.

veterinary colleges and universities. This integration of animal health care widens the spectrum of available choices to farmers, veterinarians, and extension workers and is one way of making services for local conditions both more appropriate and more cost-effective.

In addition, conservation measures should be undertaken to ensure the continued availability of effective medicinal plants through the establishment of herbal gardens.

While the use of ethnoveterinary medicine is recommended as a worthwhile and cost-effective alternative to orthodox veterinary medicine, it is important to note that local farmers should also be taught that traditional herbs are generally ineffective in the case of epidemics such as foot and mouth disease, and are not a solution for all diseases affecting animal health.

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